

ANALYSIS OF THE STEVENS-ROTH PLAN:  
A RETIREMENT PLAN FOR FEDERAL WORKERS  
COVERED BY SOCIAL SECURITY

I. DESCRIPTION OF THE PLAN

This pension design was developed under the leadership of Senator Ted Stevens, Chairman of the Subcommittee on Civil Service, Post Office and General Services, and Senator William Roth, Chairman of the Committee on Governmental Affairs. Details of the plan were specified by the staff of both the subcommittee and the full committee. CRS is using its pension evaluation models to analyze this plan, but takes no position on any of its features.

A. General Design

This pension design is for Federal civil servants who are covered by social security. Workers first hired after December 31, 1983 would automatically participate as would certain other categories of workers with service before that date. Employees exempted from participation in social security would be given an opportunity to waive that exemption and become participants in this arrangement.

The general design of the system includes, in addition to social security, a defined benefit plan and a capital accumulation plan. Workers would participate automatically in the defined benefit plan, which would be entirely funded from Federal funds. Workers could contribute as much as 10 percent of their salaries to the capital accumulation plan of which the first five percent is matched dollar-for-dollar by their employing Federal agency. For purposes of

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this analysis, the accumulating matching funds are assumed to be invested in instruments that reflect performance of the economy using the same assumptions as are used to project costs and benefits for the defined benefit component.

B. Retirement

1. Defined benefit

A defined benefit plan is one in which a formula and a definition of eligibility determine benefit awards. In this case, workers would earn 1.0 percent of the average of their highest five consecutive years of wages for each year of service completed. Wages are not "capped" for computation purposes; that is, retirement benefits are calculated using salaries that have not been limited by a statutory maximum payable amount.

Basic benefits from the defined benefit pension would be fully payable at age 62 with 5 years of service. Workers could choose to retire at age 55 with 30 years of service, with reductions of two percent for each year under age 62 at retirement. Participants could also choose to retire at age 55 with less than 30 years of service but more than 10 years, but benefits would be reduced by five percent for each year under age 62 at retirement.

Workers separated involuntarily with at least 25 years of service or after age 50 with at least 20 years would be eligible for benefits reduced by two percent per year for retirement before age 62.

Deferred benefits would be payable at age 62 for workers who separated with at least five years of service, or reduced benefits would be payable at age 55 with 10 years of service at separation.

Cost-of-living adjustments would be paid annually at two percentage points less than the rate of inflation as measured by the Consumer Price Index (CPI).

These projections, which are based upon a level long-term inflation assumption of four percent per year, would therefore increase in nominal terms by two percent per year.

## 2. Capital Accumulation

The plan includes a defined contribution plan in the form of a voluntary capital accumulation plan that would supplement the main retirement benefit.

A voluntary capital accumulation plan is one in which an employee accumulates assets in the form of a pretax savings account that can be furnished upon separation in a lump sum or converted to an annuity at the point at which the employee retires. In this proposal, a program of individual capital accumulation accounts is created from employee money voluntarily contributed, with Federal funds added to encourage participation. Employees would be permitted to contribute up to 10 percent of their salaries to the plan, with the first five percent matched by one dollar for each dollar contributed. Under certain conditions, employees would have access to their funds before retirement. If an employee separated from Federal service before becoming eligible to receive an annuity, the accumulated sums could be transferred and maintained on a tax-deferred basis in an Individual Retirement Account (IRA).

## 3. Employee Contributions

Employees would be required to contribute to social security. The cash benefits (old-age, survivors, and disability insurance) tax-rate is 5.7 percent of pay in 1985 (6.06 beginning in 1988; 6.20 beginning in 1990) up to a maximum taxable wage level (\$39,600 in 1985) that is indexed to the annual growth in wages as measured for the economy at large.

There are no mandatory contributions to the defined benefit plan.

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The capital accumulation plan, as mentioned, permits employee contributions up to 10 percent of pay with 5 percent of pay matched equally by employer contributions. Thus, those employees fully contributing up to the matching limit would receive the full value of the maximum potential employer cost for the overall retirement system, and employees contributing less would receive corresponding smaller shares of that potential employer commitment.

Employees with salaries below the social security maximum taxable base could therefore pay between 5.7 and 10.7 percent of total salary in 1985, with the latter amount necessary to receive maximum potential value of the employer retirement commitment. As the scheduled increases to the social security tax rate are phased in, these amounts would rise. Employees with salaries above the maximum would pay somewhat smaller rates as a mandatory percentage of total salary. For example, employees at a salary of \$45,000 annually would have a mandatory payment of approximately 5 percent of total salary in 1985 and thus could pay up to a maximum of about 10 percent of pay to receive maximum value. CRS estimates that the employee with average wages and average contributions to the capital accumulation plan would be paying about 8.7 percent of total pay under this plan in 1985.

#### C. Disability Benefits

A long term disability (LTD) insurance plan provided by the Government and administered by a third party would pay disability benefits to employees who are unable, because of sickness or injury, to perform the duties of their job. Employees would be eligible at any age for disability benefits after 18 months of creditable service and exhaustion of all sick leave. After the first year of entitlement to LTD benefits, the employee must be unable to do any

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Federal job in the same commuting area and within the same or similar grade level of his former job. During the first year of entitlement, the amount of the disability benefit would be 60 percent of average yearly pay, based on the highest five consecutive years of salary or, if the employee has been employed for less than five years, on average pay over the total employment period. In subsequent years of entitlement, the amount of disability would be 60 percent if eligible for social security; 40 percent if not eligible.

Disabled workers would be required to apply for social security disability. If they become entitled to social security disability benefits, the social security primary benefit would be subtracted from the LTD benefit, and the LTD benefit would continue until the worker is recovered or reaches age 62. If the worker does not meet the social security definition of disability, the LTD benefit would be reduced after one year to 40 percent of average yearly salary, and would continue until the worker is recovered or reaches age 55.

At the discretion of the third party administrator, the beneficiary may be required to undergo periodic medical reevaluations. If he is found to have recovered, his benefit would cease. Beneficiaries also would be required to report their earnings each year. If in any calendar year the beneficiary's income from work is at least 60 percent of the current salary of the position from which that person retired, his earnings capacity would be considered restored and benefits would cease.

In computing the LTD benefit, annual average salary would be increased by two percentage points less than inflation. If the worker is entitled to social security disability benefits, the amount of social security subtracted from the LTD benefit in any one month would be the worker's social security benefit, including subsequent COLAs.

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During the LTD benefit period, the employee's service would continue to be credited toward the defined benefit formula, and the high-five amount would go up by two percentage points less than inflation. The employee could withdraw his accrued benefits from the defined contribution part of the retirement plan, but he also would have the option of continuing to participate. After the LTD benefit period ends, employees would be eligible for retirement benefits based on age and service at that time.

D. Survivor Benefits

1. Preretirement Death

Surviving spouses of workers who die after becoming "fully insured" under social security (generally 40 quarters of covered employment) are eligible for spouse survivor benefits if they are over age 59 (49 if fully disabled). Social security mother's and father's benefits are paid to survivors of any age if the deceased worker had at least six quarters of covered employment and if the surviving spouse is responsible for the care of a child under the age of 16 (or disabled) of the deceased worker. In general, the marriage must have lasted nine months. Benefits are terminated if the survivor remarries before age 60.

In addition to social security survivor benefits, the pension plan would provide benefits to the spouse of a worker who dies after having reached eligibility for early retirement (age 55 with at least 10 years of service) or for full retirement benefits (age 62). The survivor benefit would be computed as if the worker had retired the day before death and elected a 50 percent joint-and-survivor plan; early retirement reductions would be applied (2 percent for each year the worker was under age 62, but was at least age 55 and had 30 or

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more years of service; 5 percent for each year the worker was under age 62, but was at least age 55 and had more than 10 but fewer than 30 years of service).

If the vested worker dies before the earliest age of eligibility based upon accrued service at death, survivor benefits from the pension plan would not begin until the date on which the deceased worker would have reached the age of eligibility. If the worker had fewer than 30 but more than 10 years of service at the time of death, benefits could begin on the deceased worker's 55th birthday, but the five percent early retirement reduction would be made for each year under age 62. Thus, when survivor benefits became payable, they would be based on a pension reduced by 35 percent. If the worker had 30 years of service at the time of death, a two percent early retirement reduction would be made for each year under age 62. Thus, the survivor benefits would be based on a pension reduced by 14 percent for early retirement.

Any balance in the capital accumulation plan would be payable to the surviving spouse and could be paid either in a lump sum, or as a life annuity. If there is no surviving spouse, or other named beneficiary, the account balance would become part of the deceased worker's estate.

## 2. Postretirement Death

Social security spouse survivor benefits are payable when the widow or widower of a retiree (who was eligible for social security retirement benefits) is over age 59 (subject to an earnings test) or over age 49 if completely disabled. Social security mother's and father's benefits are paid to surviving spouses of any age if caring for child under age 16 (or disabled) of the deceased worker or retiree. The marriage must have lasted at least nine months; social security benefits are discontinued if the spouse remarries before age 60.

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Under the pension plan, retiring married workers automatically provide a 50 percent joint-and-survivor benefit, for which a full actuarial reduction is made in the annuity of the retiree. This coverage is mandatory unless jointly rejected. Thus, in addition to any social security payable, the surviving spouse of a retiree would receive 50 percent of the amount the retiree had been receiving before death; the retiree's annuity would have been reduced by roughly 10 to 13 percent to cover the cost of paying a spouse survivor benefit and for early retirement, if applicable.

At the time of retirement the worker would specify the form in which benefits from the capital accumulation plan would be paid. If an election is made to receive an annuity with an actuarially determined survivor benefit, then the spouse survivor would receive that benefit in addition to the joint-and-survivor benefit from the defined benefit plan.

### 3. Group Life Insurance

Basic life insurance is provided at no charge to the employee. Benefits are equal to one year's salary rounded to the next \$1,000 plus an additional \$2,000 for all workers over age 45. Benefits are doubled for those 35 or under, and decline gradually to age 45. Workers would be allowed to purchase, at full cost, additional coverage, as they can under the current system. Post-retirement coverage, as under current law, is available. Under current law, until December 31, 1989, Federal employees retiring before age 65 retain full coverage, at no cost, up to age 65. At age 65, the government insurance declines by 2 percent per month to a minimum of 25 percent of the amount in force at retirement. Retiring employees can elect, at an extra cost, to reduce or eliminate the reduction in coverage at age 65. As of January 1, 1990, all



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retirees under age 65 will have life insurance premiums withheld from their annuities to retain full coverage at age 65.

#### 4. Children's Survivor Benefits

Unlike the current CSRS, no child survivor benefits would be available from the pension plan. Instead, this need would be filled by social security. Surviving children of workers with at least six quarters of social security covered employment are eligible for social security children's benefits if they are under age 16, or under 18 if a fulltime student in elementary or secondary school. No benefits would be paid to students of any age in post-secondary school.

The capital accumulation plan could be set up to allow a retired worker to take the benefits in the form of an annuity and name someone other than a spouse as the beneficiary of a survivor benefit, and, theoretically, a child could be named. The amount of that child survivor benefit would be determined actuarially, based on the age of the named child.

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II. PLAN PROVISIONS

TABLE 1. Plan Provisions

	Current CSRS	Stevens-Roth Plan
<u>A. Social Security</u>		
Coverage (old age, survivors, and disability insurance cash benefits (OASDI))	None	Employees covered by Social Security Amendments of 1983
Contributions	N/A	5.7% of pay (6.06 beginning in 1988; 6.20 beginning in 1990) to social security (for OASDI coverage) up to maximum taxable wage base (\$39,600 in 1985)
<u>B. Defined Benefit: Retirement</u>		
Basic plan design	Defined benefit	Defined benefit not integrated (fully added to social security)
Required employee contributions	7% of total pay	No required contribution to new CSRS
Vesting	5 yrs. for retirement	5 yrs. for retirement, and
	5 yrs. for disability	1.5 yrs. for disability
	1.5 yrs. for preretirement death benefits	5 yrs. for preretirement death benefits
Salary base	Average of high-3 yrs. salary	Average of high-5 yrs. salary of record

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TABLE 1. Plan Provisions (continued)

	Current CSRS	Stevens-Roth Plan
Retirement benefit formula (accrual rate)	1.5% x first 5 yrs. of service. 1.75% x second 5 yrs. of service. 2.0 x all yrs. of service over 10 yrs., all x salary base	1.0% x yrs. of service
Age for unreduced retirement benefits	Age 55 with 30 yrs. service. 60 with 20 yrs. service. 62 with 5 yrs. service	62 with 5 yrs. service
Early retirement; age and reductions	No provisions	(a) 55 with 30 yrs. service. Benefit reduced 2% for each yr. under age 62  (b) 55 with 10 yrs. service. Benefit reduced 5% for each yr. under age 62
Involuntary early retirement; age and reductions	Age 50 with 20 yrs. service. Any age with 25 yrs service. Benefit reduced 2% for each yr. under age 55	Same as current, but benefit reduced 2% for each yr. under age 62
Deferred retirement	At least 5 yrs. service; accrued benefit payable at age 62	At least 5 yrs. service; full accrued benefit payable at age 62, or reduced benefit at age 55 with 10 yrs. service
Refunds	Option to withdraw at separation sums contributed with benefits forfeited	No contributions, thus no refund
Cost-of-living adjustments	Annually, full rate of inflation measured by Consumer Price Index (CPI)	Annually, 2 percentage points less than the rate of inflation measured by CPI

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TABLE 1. Plan Provisions (continued)

	Current CSRS	Stevens-Roth Plan
<b>C. <u>Disability Benefits</u></b>		
Administration and eligibility	Provided from CSRS, if employee has 5 yrs. of service	To be provided under separate LTD plan with third-party administrator. Disability benefits are paid first from unused sick leave, then after no further waiting period from LTD plan if employee has 18 mos. of service for LTD eligibility
Definition of disability	Unable to do own job	During first yr. after entitlement to LTD benefits, employee must be unable to do own job. After first year employee must be unable to do any Federal job in same commuting area and same grade level. Also, total earnings from work may not exceed 60% of pay level for former job, and employee may be given physical exams
Disability benefit amounts	Annuity earned at onset, or the lower of (a) 40% of salary base, or (b) annuity that would be paid projecting service to age 60 at the same salary base	60% of high-5 offset after 5 mo. waiting period by 100% of social security primary benefit, payable to age 62  If social security definition of disability is not met, benefits reduced 1 yr. after entitlement to LTD benefits to 40% of high-5 payable to age 55  Social security amount offset will be amount payable to worker, and final pay used to compute LTD benefits will increase by two percentage points less than inflation

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TABLE 1. Plan Provisions (continued)

	Current CSRS	Stevens-Roth Plan
Retirement benefits after disability	Disability pension continues for life if no recovery before normal retirement age	During LTD benefit period, employee's service continues to be credited toward defined-benefit formula, high-5 amount goes up by two percentage points less than inflation and employee may participate in defined-contribution part of plan. After LTD benefit period ends, employee is eligible for retirement benefits based on age and service at that time
<u>D. Survivors Benefits</u>		
Preretirement death benefit, spouse	55% of the annuity earned at death, or, if larger, the lesser of (a) 55% of 40% of salary base, or (b) 55% of annuity earned with service projected to age 60 at same salary base	Surviving spouse gets:  (a) Group life insurance automatically provided at no cost to employee. Benefits for workers over age 45 are one x annual pay, rounded up to the next \$1,000, plus \$2,000. This amount is doubled for workers under age 35, declining gradually to age 45. Benefits are doubled in cases of accidental death. (These benefits are the same as current law, except that all employees are covered and no employee payment is required.)  (b) Any social security benefits payable with no offsets

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TABLE 1. Plan Provisions (continued)

	Current CSRS	Stevens-Roth Plan
		(c) At death of participant who is eligible to retire, lifetime pension equal to 50% of accrued pension, reduced for early retirement (2% per yr. under age 62 if 30 or more years of service at death and 5% per yr. if under 30 yrs. of service) and for election of 50% joint-and-survivor form
		(d) At death of participant who is vested but not eligible to retire, lifetime pension (commencing when the employee first would have become eligible to retire) equal to 50% of accrued pension, reduced for early retirement (as under (c) above) and for election of 50% joint-and-survivor form
Preretirement death benefit, children	Unrelated to annuity; annually adjusted dollar amount varied by number of children, and whether or not orphaned	None from plan; benefits provided by social security
Optional postretirement death benefit, spouse	55% of earned retirement annuity unless choice rejected; option results in reduction to earned retirement annuity of 2.5% of first \$3,600 of annuity and 10% reduction to annuity over \$3,600	Annuity to married retiree is automatically reduced actuarially as in a 50% joint-and-survivor plan to provide a spouse survivor annuity. (Automatic unless rejected.)

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TABLE 1. Plan Provisions (continued)

	Current CSRS	Stevens-Roth Plan
Children	Same as for preretirement death benefit	None from plan; benefits provided from social security
Special classes	<p>Special provisions are available for certain groups:</p> <p>Law enforcement, fire-fighters, air traffic controllers, Congress, etc.</p>	<p>Law enforcement, fire-fighters, and air traffic controllers may retire at age 55 with 25 yrs. Supplement equal to social security payable ages 55-62. National guard technicians may retire at age 55 with 30 yrs. service, with no supplement payable. These classes may retire before 55, with reduction of 5% per yr. below age 55, and without supplement payable before 55. Other groups get the regular benefits of the plan</p>
<u>F. Voluntary Capital Accumulation</u>		
Employer contribution	N/A	\$1 for each \$1 by employees, up to 5% of pay
Employee contributions not matched	N/A	Up to additional 5% of pay
Vesting	N/A	Employee vested immediately for own contributions. Employer contributions vested at 20% after 1st yr., increasing in equal increments to 100% after 5th yr.

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### III. COST ESTIMATES

The following tables display the normal costs of this plan. Table 2 compares the cost of the plan to the cost of the current CSRS, using a consistent set of assumptions. The CRS model projects that the cost of the plan to the employer would be about 17 percent less than the current CSRS (including the net increased cost of basic life insurance) over the projection period. However, the total cost of the plan, including average employee contributions, would cost seven percent less than the current CSRS. Table 3 shows a breakdown of cost under the plan by benefit.



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TABLE 2. Comparison of Entry Age Normal Cost Estimates  
of Current CSRS to Stevens-Roth Plan a/

	Current CSRS (baseline)			Stevens-Roth Plan		
	Employer share	Employee share	Total	Employer share	Employee share (average)	Total
Defined Benefit Plan	25.0%	7.0%	32.0%	11.7%	--	11.7%
Social security <u>b/</u>	--	--	--	5.9	5.9	11.8
FEGLI change <u>c/</u>	--	0.2	--	0.2	--	0.2
Capital accumulation plan (voluntary) <u>d/</u>	--	--	--	3.0	3.0	6.0
Full Cost <u>e/</u>	25.0	7.2	32.2	20.8	8.9	29.7

a/ All cost figures are rounded to the nearest tenth of a percent. Administrative costs and benefits to special groups are excluded. Under the current CSRS these costs are estimated to be 0.1 and 0.3 percent of pay, respectively.

b/ Social security cost is the percentage of total Federal payroll taxable for social security (OASDI).

c/ Increased employer cost (0.2%) of Federal Employees Group Life Insurance (FEGLI) resulting from the employer assuming the full cost of Federal worker life insurance.

d/ For employees, cost of the capital accumulation plan is shown as the average cost. Average cost is determined by dividing the projected sum of all contributions (up to the specified matching limit of five percent for each employee) by the number of employees, assuming 60 percent rate of full participation. The cost to the government is the employee cost times the matching rate minus the sum of unvested contributions forfeited (0.03%) by separating employees.

e/ Average full cost: For the existing CSRS, includes the average employee contribution for life insurance coverage while working. For Stevens-Roth, includes average employee contribution and employer match to the capital accumulation plan.

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TABLE 3. Entry Age Normal Cost of Stevens-Roth Plan by Benefit a/  
Normal Cost (Percent of Total Federal Pay)

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DEFINED BENEFIT COMPONENT

## Annuities to employees:

Optional retirement	8.5
Involuntary retirement	0.4
Disability retirement <u>b/</u>	1.0
Deferred retirement	0.6

Subtotal	10.5
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## Annuities to survivors of:

Age retirees	0.8
Disability retirees	0.1

Active employees	0.3
To children	---

Subtotal	1.2
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Refunds	---
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TOTAL BENEFITS DEFINED BENEFITS	11.7
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INCREASED COST OF FEGLI	.2 <u>c/</u>
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TOTAL BENEFITS CAPITAL ACCUMULATION	6.0 <u>d/</u>
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TOTAL BENEFITS SOCIAL SECURITY	11.8 <u>e/</u>
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TOTAL BENEFITS	29.7
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## LESS EMPLOYEE CONTRIBUTIONS

Defined Benefit	---
Capital Accumulation	- 3.0 <u>d/</u>
Social Security	- 5.9 <u>f/</u>

TOTAL EMPLOYER COST	20.8
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a/ Detail may not sum to totals due to rounding. Administrative costs and benefits to special groups are excluded.

b/ Includes deferred retirement benefits to disabled annuitants. (0.5%)

c/ Net increase in Federal Employees Group Life Insurance (FEGLI) from changes made to that program as part of the Stevens-Roth Plan.

d/ Based upon net employer contributions (minus forfeitures of 0.03% average contribution for all workers including nonparticipants.

e/ Approximately 0.4 percent of payroll of the social security cost is not distributed to Federal workers but flows to relatively lower-income social security participants outside the Federal government.

f/ Social security average contribution as a percent of total payroll.

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#### IV. REPLACEMENT RATES

The following tables and figures show the percent of gross preretirement dollars replaced by the various retirement income components. Gross replacement rates are defined as the percentage of gross preretirement wages replaced by gross postretirement benefits.

For these benefit projections, employees are assumed to be retiring in the year 2030, after all enacted changes to social security retirement age have been phased in. In 2030, the age for full social security benefits is 67 with 30 percent reduction applied to benefits received at age 62. The tables show replacement rates for single workers, by salary level, age at retirement, and service, with benefit values shown at retirement age, at age 62 and age 80. Capital accumulation amounts are indexed so that level values over time are shown. The figures show replacement rates for various combinations graphically and compare them to the current system.

The tables and figures show a range of replacement rates from the capital accumulation plan. The band ranges from rates projected for workers participating fully to those for workers participating not at all. To achieve the maximum replacement rate, these hypothetical workers would contribute to the plan five percent of before-tax pay, matched equally by an employer contribution. The maximum annuity shown in these figures implies full participation throughout the work career; conversely, the bottom line of the band displays the replacement rates for workers never participating. Experience from the private sector

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suggests that most workers would not exhibit either of these polar characteristics but would vary their participation, largely in response to changing personal or broader economic circumstances.

Actual participation is influenced by a worker's age, income, marginal tax rate, availability of other tax-favored savings arrangements, overall investment strategy, and preferences concerning current versus future consumption. Participation rates are also affected by the availability of loan and "hardship" withdrawal provisions. If workers did not participate in all years, had more rapid salary progressions, realized lower interest rates, or did not contribute the full five percent of pay, replacement rates from the capital accumulation plan would be lower. It is also possible that different economic experiences could produce higher rates of return and corresponding higher potential replacement rates.

Care should be taken when comparing replacement rates derived through participation in a tax-deferred capital accumulation plan with those available to nonparticipants and with replacement rates earned under the current CSRS. The higher replacement rate achieved by participation in the plan results in lower preretirement disposable income. Foregoing participation in the plan in favor of higher consumption while working would result in lower replacement rates at retirement, but a relatively higher standard of living might thereby be attained before retirement than would otherwise occur if compensation were deferred until retirement. Furthermore, earnings replacement rates shown for workers covered by the CSRS do not take into account voluntary (albeit unmatched retirement savings that these workers could make, for example, into an Individual Retirement Account (IRA). In other words, pre-1984 Federal workers who voluntarily saved five percent of pay would also have increased their earnings replacement rate above that shown in the figures for CSRS.

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TABLE 4. Replacement Rates  
Current Civil Service Retirement System  
(in percents)

(Final salaries have been adjusted to 1985 dollars)	\$15,000	\$30,000	\$45,000	\$60,000	\$75,000
<u>Gross replacement rates</u>					
10 years service	15%	15%	15%	15%	15%
20 years service	34	34	34	34	34
30 years service	53	53	53	53	53
35 years service	63	63	63	63	63
40 years service	72	72	72	72	72

Note: These rates are for persons retiring in the year 2030.

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TABLE 5. Replacement Rates

Add-on Plan: 1 Percent Accrual Rate; CAP with 1 to 1 Match  
 Up to 5 Percent of Pay; 2 Percent Early Retirement Reduction;  
 Postretirement Adjustment: CPI - 2  
 (In percents)

(Final salaries have been adjusted to 1985 dollars)	\$15,000	\$30,000	\$45,000	\$60,000	\$75,000
Retirement at:					
Age 55/30 years (gross rates)					
Total rate	38%	38%	38%	38%	38%
(without C.A. plan)	(23%)	(23%)	(23%)	(23%)	(23%)
Pension	23	23	23	23	23
OASDI	0	0	0	0	0
C.A. plan	15	15	15	15	15
Total rate at age 62	57%	52%	48%	45%	43%
(without C.A. plan)	(42%)	(37%)	(33%)	(30%)	(28%)
Pension	20	20	20	20	20
OASDI	22	17	13	10	8
C.A. plan	15	15	15	15	15
Total at age 80	51%	46%	42%	39%	37%
(without C.A. plan)	(36%)	(31%)	(27%)	(24%)	(22%)
Pension	14	14	14	14	14
OASDI	22	17	13	10	8
C.A. plan	15	15	15	15	15

NOTE: These rates are for persons retiring in the year 2030. Totals may not add due to rounding.

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TABLE 6. Replacement Rates

Add-on Plan: 1 Percent Accrual Rate; CAP with 1-1 Match  
 Up to 5 Percent of Pay; 2 Percent Early Retirement Reduction;  
 Postretirement Adjustment: CPI - 2  
 (In percents)

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(Final salaries have been adjusted to 1985 dollars)	\$15,000	\$30,000	\$45,000	\$60,000	\$75,000
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Retirement at:

Age 62/10 years (gross rates)

Total rate	21%	20%	19%	18%	18%
(without C.A. plan)	(15%)	(13%)	(12%)	(12%)	(11%)
Pension	9	9	9	9	9
OASDI	6	5	4	3	3
C.A. plan	6	6	6	6	6

Retirement at:

Age 62/20 years (gross rates)

Total rate	44%	42%	39%	37%	36%
(without C.A. plan)	(31%)	(29%)	(26%)	(24%)	(23%)
Pension	18	18	18	18	18
OASDI	14	11	8	7	5
C.A. plan	13	13	13	13	13
Total at age 80	39%	36%	34%	32%	31%
(without C.A. plan)	(26%)	(24%)	(21%)	(19%)	(18%)

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Note: These rates are for persons retiring in the year 2030. Totals may not add due to rounding.

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TABLE 7. Replacement Rates  
 Add-on Plan: 1 Percent Accrual Rate; CAP with 1-1 Match  
 Up to 5 Percent of Pay; 2 Percent Early Retirement Reduction;  
 Postretirement Adjustment: CPI - 2  
 (In percents)

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(Final salaries have been  
 adjusted to 1985 dollars)

	\$15,000	\$30,000	\$45,000	\$60,000	\$75,000
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Retirement at:

Age 62/30 years (gross rates)

Total rate	69%	64%	60%	56%	54%
(without C.A. plan)	(50%)	(44%)	(40%)	(37%)	(35%)
Pension	27	27	27	27	27
OASDI	23	18	13	10	8
C.A. plan	19	19	19	19	19

Retirement at:

Age 62/35 years (gross rate)

Total rate	81%	75%	70%	66%	63%
(without C.A. plan)	(59%)	(52%)	(47%)	(44%)	(41%)
Pension	31	31	31	31	31
OASDI	27	21	16	12	10
C.A. plan	22	22	22	22	22
Total rate at age 65	79%	73%	68%	64%	62%
(without C.A. plan)	(57%)	(51%)	(46%)	(42%)	(39%)
Total rate at age 80	72%	65%	60%	57%	54%
(without C.A. plan)	(49%)	(43%)	(38%)	(34%)	(32%)

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Note: These rates are for persons retiring in the year 2030. Totals may not add due to rounding.



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STEVENS-ROTH PLAN

TABLE 8. Replacement Rates  
 Add-on Plan: 1 Percent Accrual Rate; CAP with 1-1 Match  
 Up to 5 Percent of Pay; 2 Percent Early Retirement Reduction;  
 Postretirement Adjustment: CPI - 2  
 (In percents)

(Final salaries have been adjusted to 1985 dollars)	\$15,000	\$30,000	\$45,000	\$60,000	\$75,000
Retirement at:					
<u>Age 62/40 years (gross rates)</u>					
Total rate	89%	82%	77%	73%	71%
(without C.A. plan)	(63%)	(57%)	(52%)	(48%)	(46%)
Pension	36	36	36	36	36
OASDI	28	21	16	12	10
C.A. plan	25	25	25	25	25
Retirement at:					
<u>Age 65/30 years (gross rates)</u>					
Total rate	76%	69%	64%	61%	58%
(without C.A. plan)	(54%)	(48%)	(43%)	(39%)	(37%)
Pension	27	27	27	27	27
OASDI	27	21	16	12	10
C.A. plan	22	22	22	22	22

Note: These rates are for persons retiring in the year 2030. Totals may not add due to rounding.

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STEVENS-ROTH PLAN

TABLE 9. Replacement Rates

Add-on Plan: 1 Percent Accrual Rate; CAP with 1-1 Match  
 Up to 5 Percent of Pay; 2 Percent Early Retirement Reduction;  
 Postretirement Adjustment: CPI - 2  
 (In percents)

(Final salaries have been adjusted to 1985 dollars)	\$15,000	\$30,000	\$45,000	\$60,000	\$75,000
Retirement at:					
<u>Age 67/30 years (gross rates)</u>					
Total rate	81%	74%	68%	64%	62%
(without C.A. plan)	(58%)	(51%)	(45%)	(41%)	(38%)
Pension	27	27	27	27	27
OASDI	31	24	18	14	11
C.A. plan	23	23	23	23	23
Retirement at:					
<u>Age 67/40 years (gross rates)</u>					
Total rate	105%	95%	88%	83%	80%
(without C.A. plan)	(74%)	(64%)	(58%)	(52%)	(49%)
Pension	36	36	36	36	36
OASDI	38	29	22	17	13
C.A. plan	31	31	31	31	31

NOTE: These rates are for persons retiring in the year 2030. Totals may not add due to rounding.

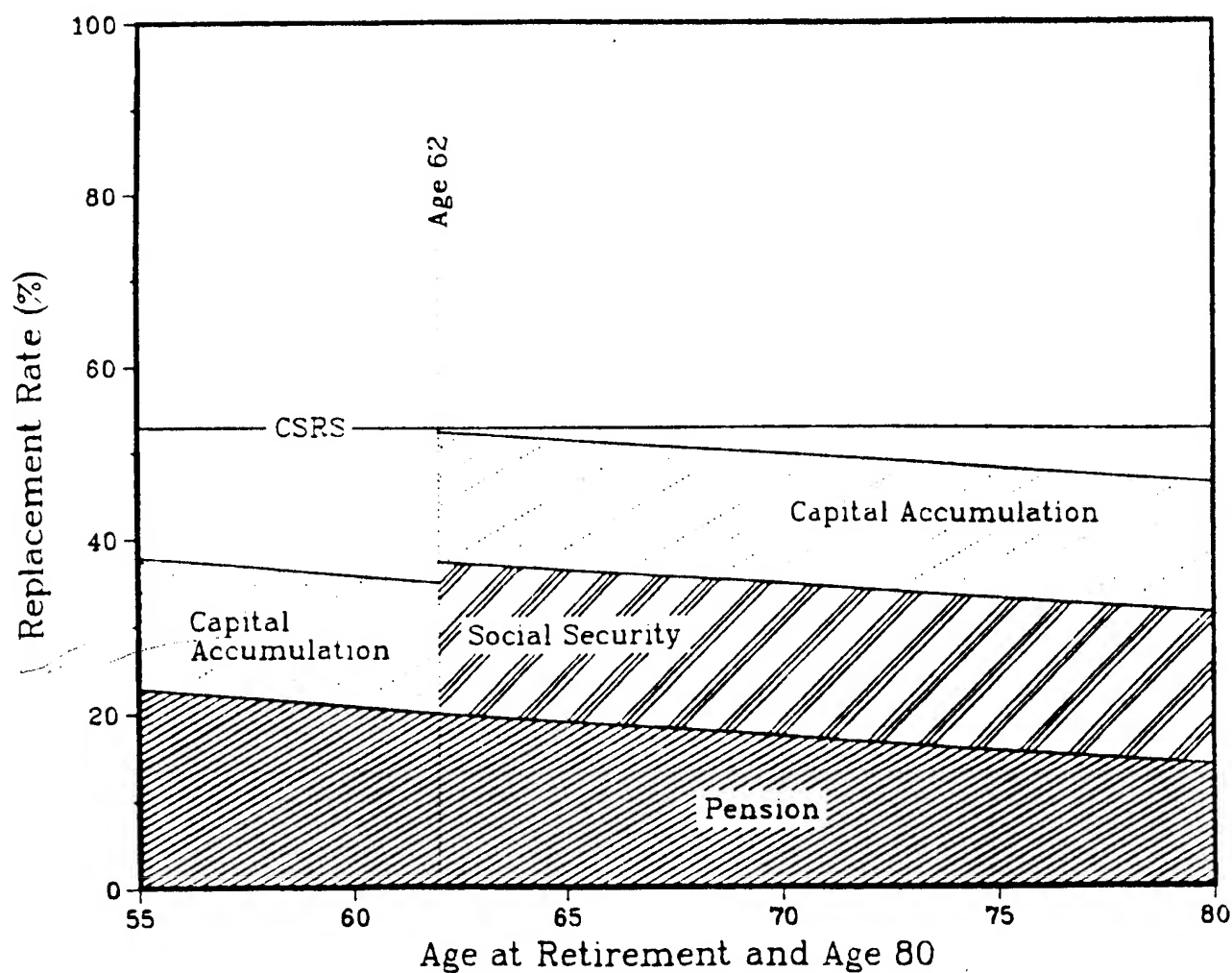
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STEVENS-ROTH PLAN

FIGURE 1. Benefit Value at Retirement and After

Gross Replacement Rates  
Worker Retiring in the Year 2030

Age: 55  
Service: 30 years  
Salary: \$30,000 (adjusted  
to 1985 levels)



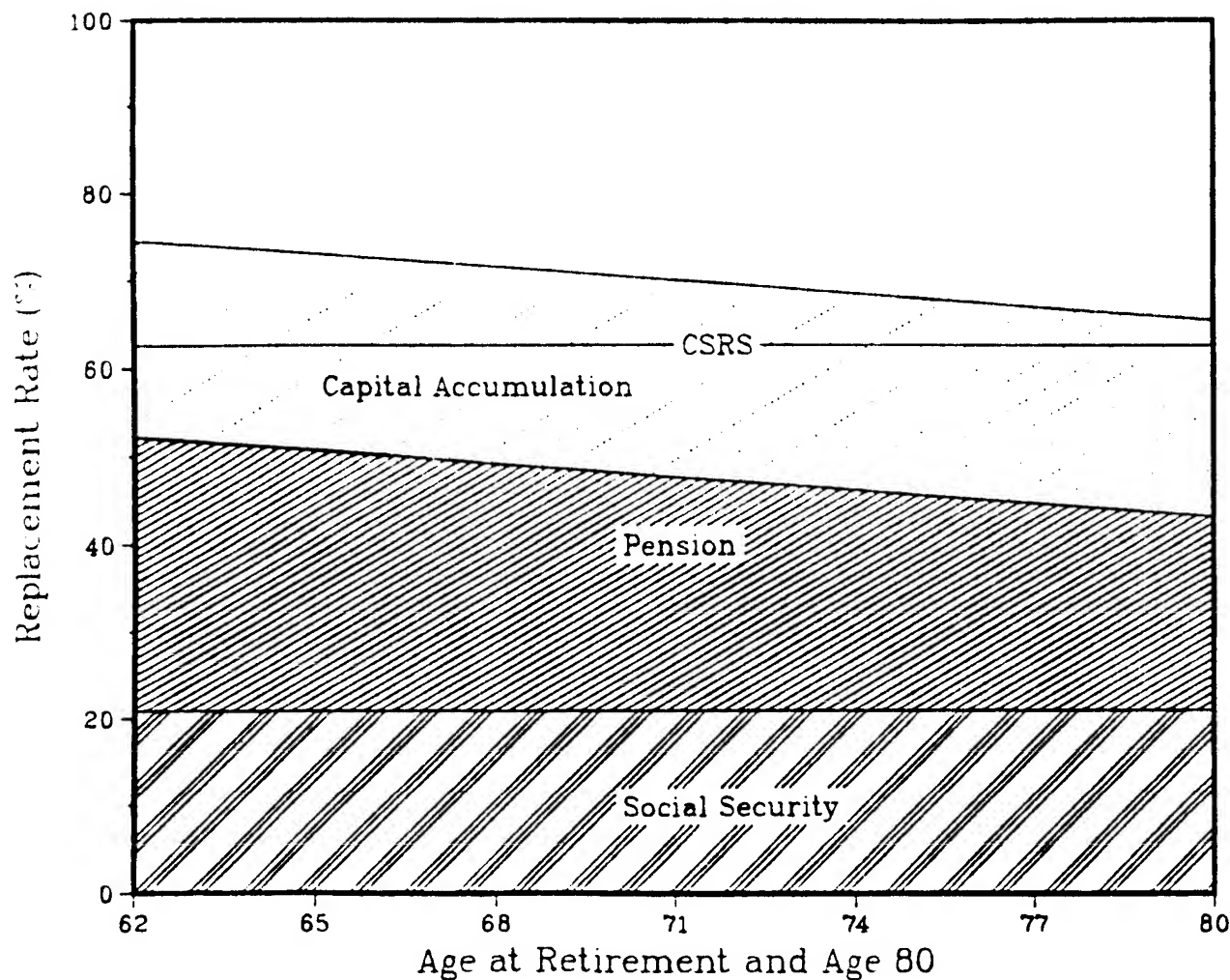
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STEVENS-ROTH PLAN

FIGURE 2. Benefit Value at Retirement and After

Gross Replacement Rates  
Worker Retiring in the Year 2030

Age: 62  
Service: 35 years  
Salary: \$30,000 (adjusted  
to 1985 levels)



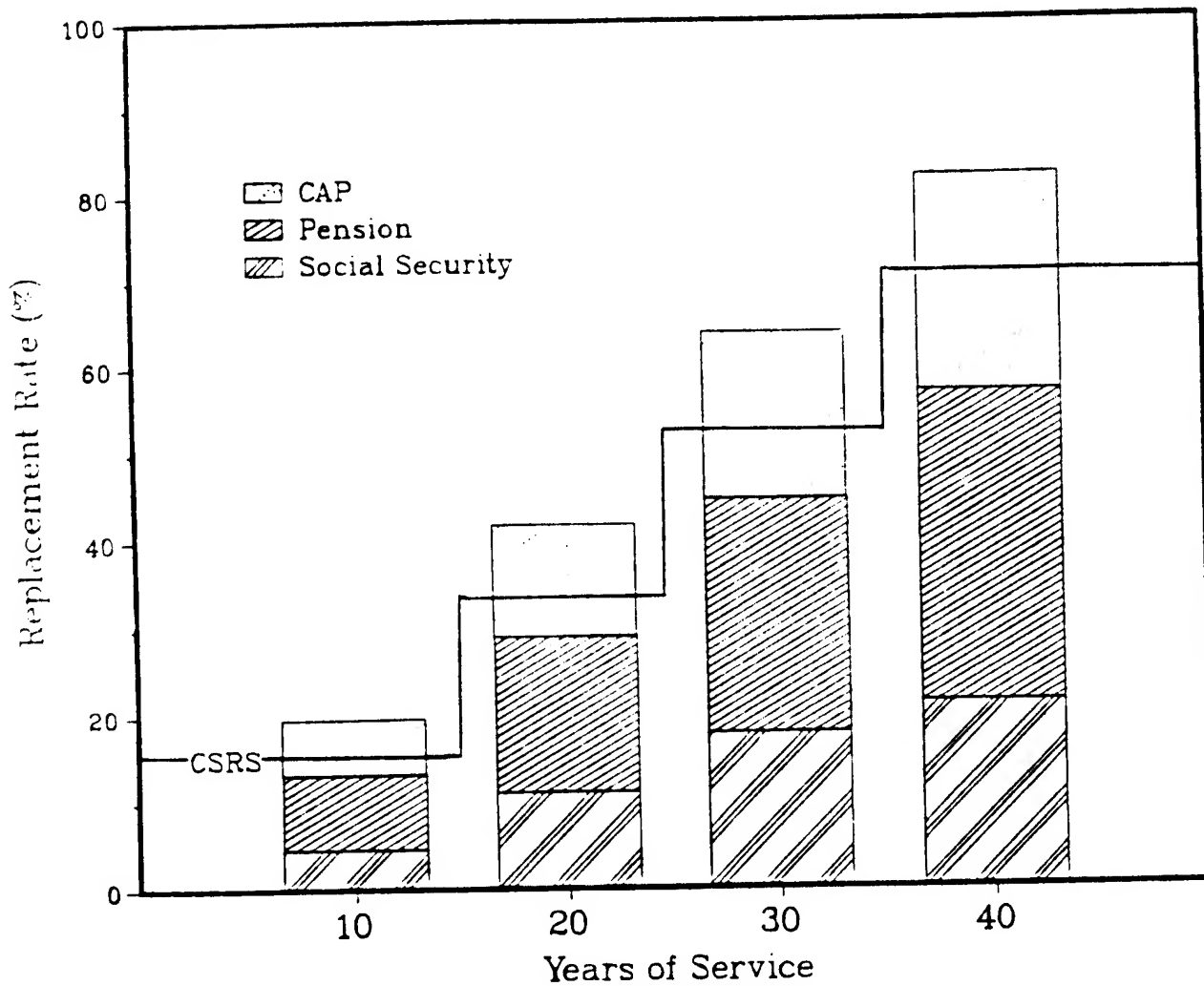
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STEVENS-ROTH PLAN

FIGURE 3. Benefit Value at Retirement with  
Different Amounts of Service

Gross Replacement Rates  
Worker Retiring in the Year 2030

Age: 62  
Service: Varies  
Salary: \$30,000 (adjusted  
to 1985 levels)



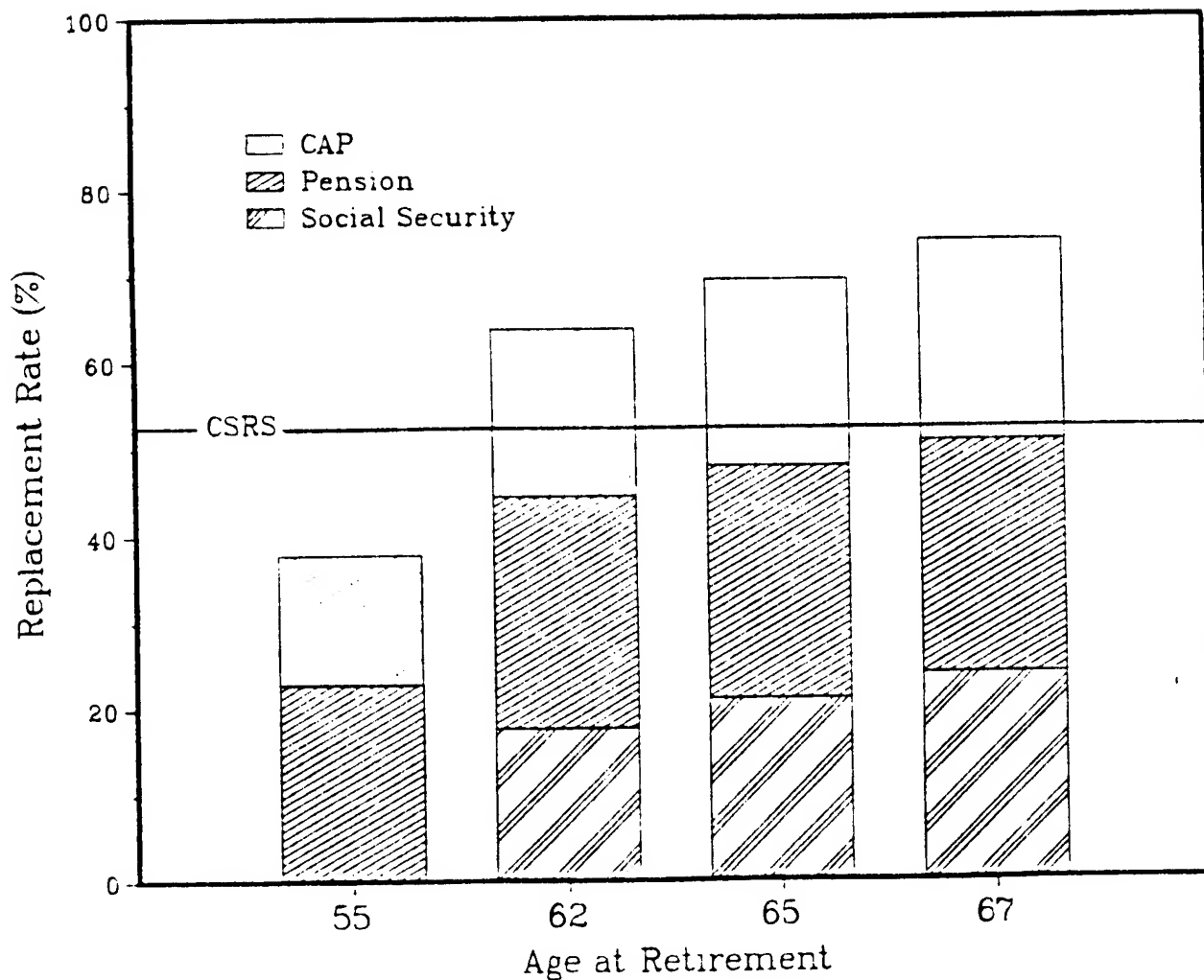
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STEVENS-ROTH PLAN

FIGURE 4. Benefit Value at Retirement for  
Workers with Different Ages

Gross Replacement Rates  
Worker Retiring in the Year 2030

Age: Varies  
Service: 30 years  
Salary: \$30,000 (adjusted  
to 1985 levels)



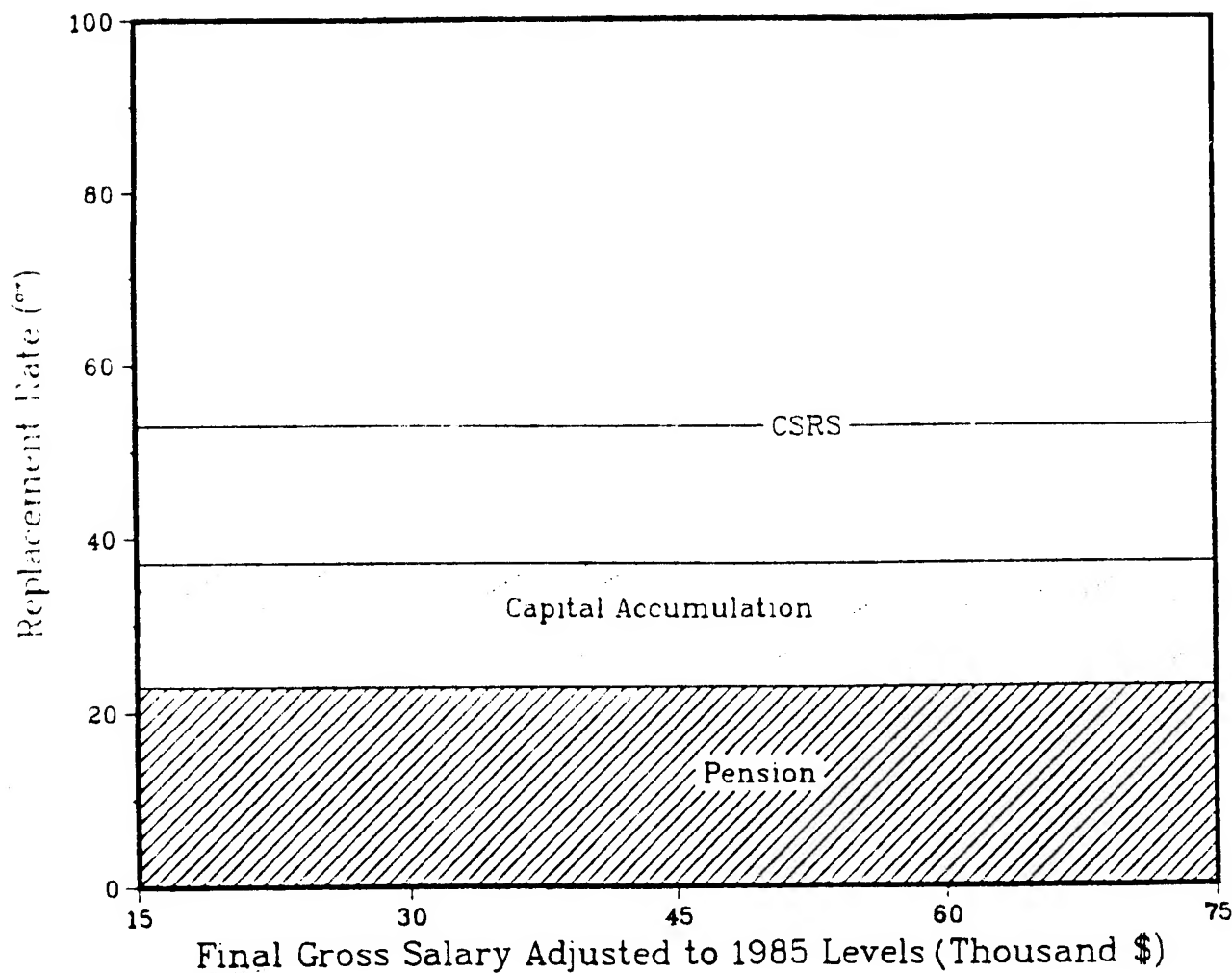
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STEVENS-ROTH PLAN

FIGURE 5. Benefit Value at Retirement for  
Workers with Different Salaries

Gross Replacement Rates  
Worker Retiring in the Year 2030

Age: 55  
Service: 30 years  
Salary: Varies



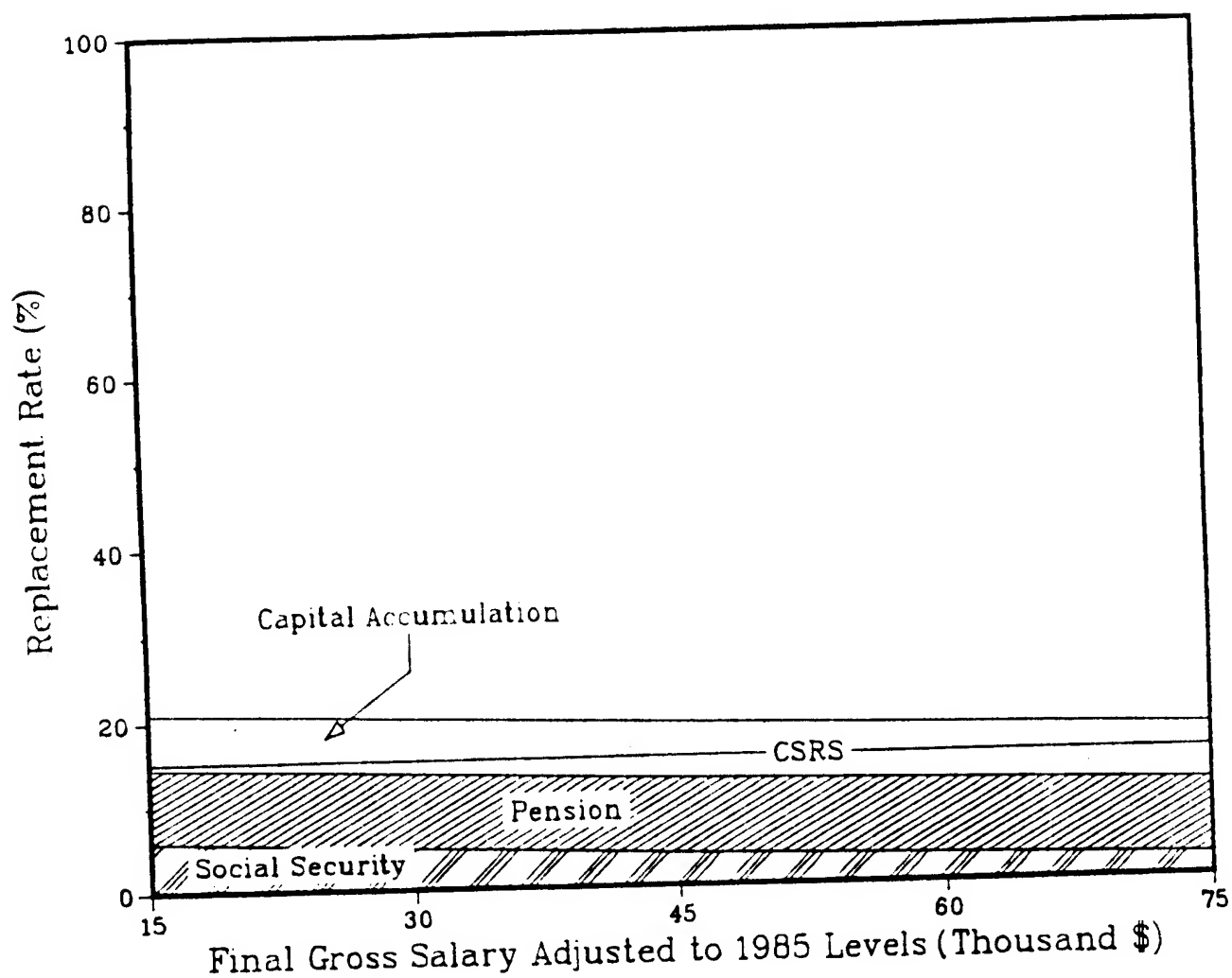
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STEVENS-ROTH PLAN

FIGURE 6. Benefit Value at Retirement for  
Workers with Different Salaries

Gross Replacement Rates  
Worker Retiring in the Year 2030

Age: 62  
Service: 10 years  
Salary: Varies





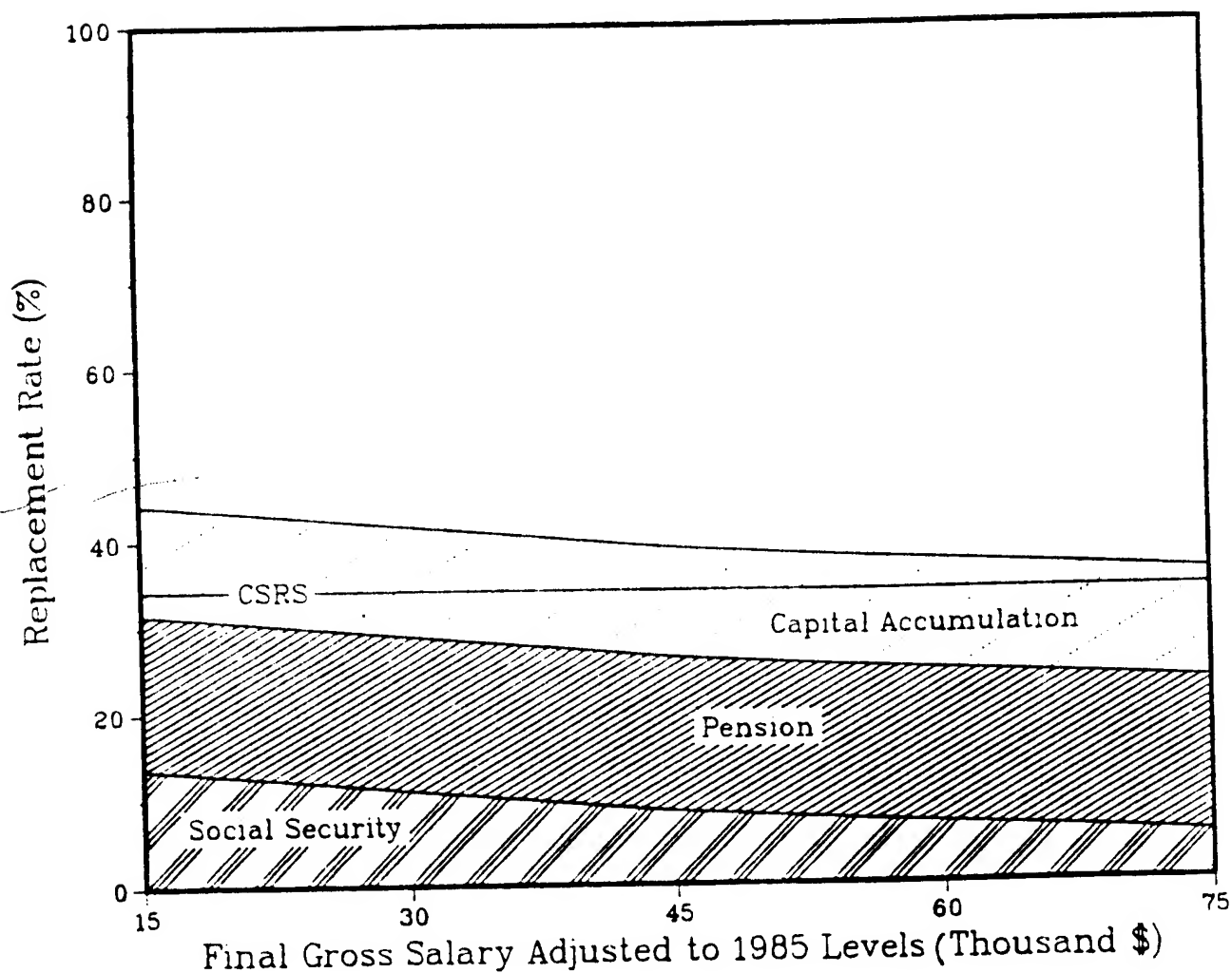
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STEVENS-ROTH PLAN

FIGURE 7. Benefit Value at Retirement for  
Workers with Different Salaries

Gross Replacement Rates  
Worker Retiring in the Year 2030

Age: 62  
Service: 20 years  
Salary: Varies



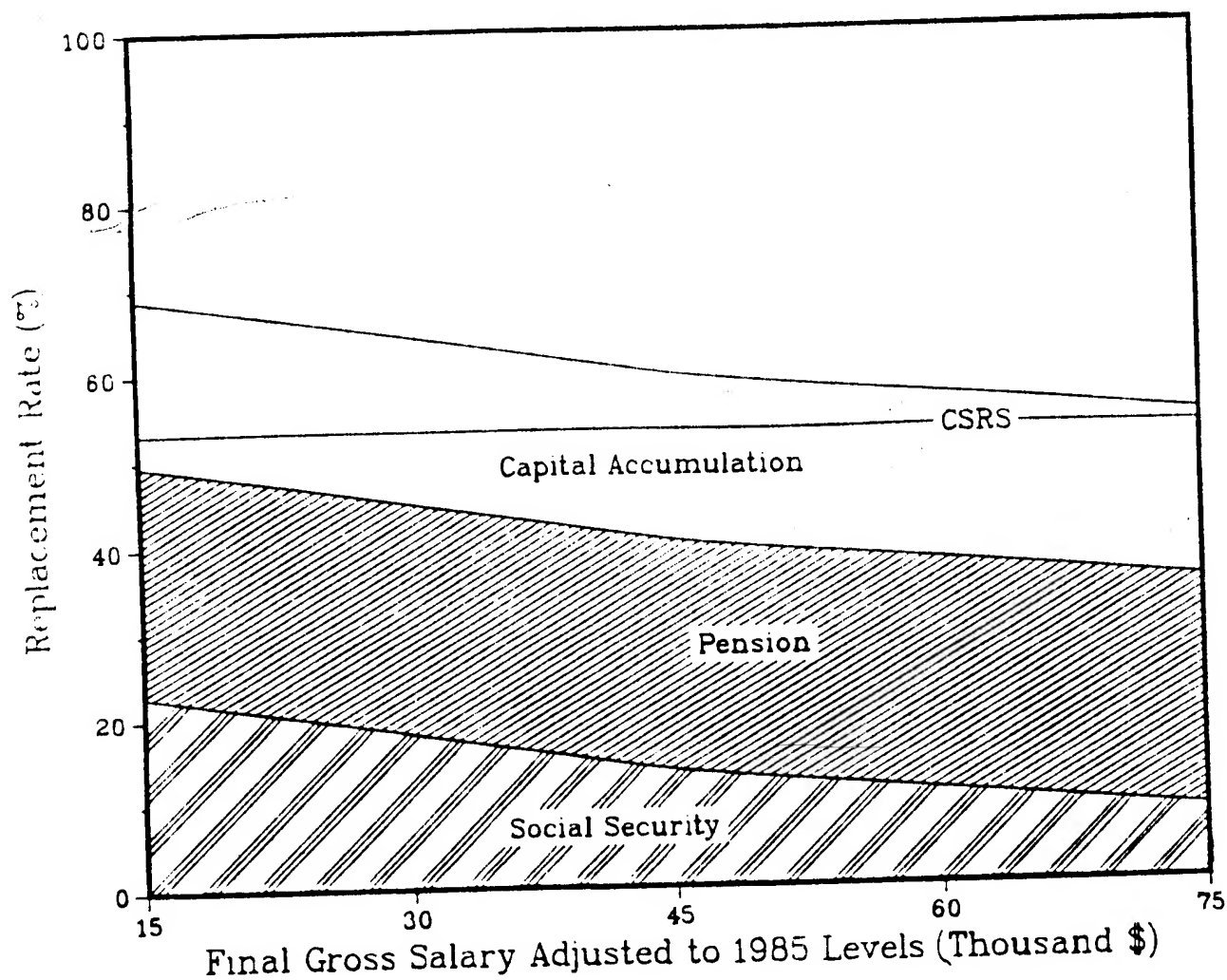
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STEVENS-ROTH PLAN

FIGURE 8. Benefit Value at Retirement for  
Workers with Different Salaries

Gross Replacement Rates  
Worker Retiring in the Year 2030

Age: 62  
Service: 30 years  
Salary: Varies



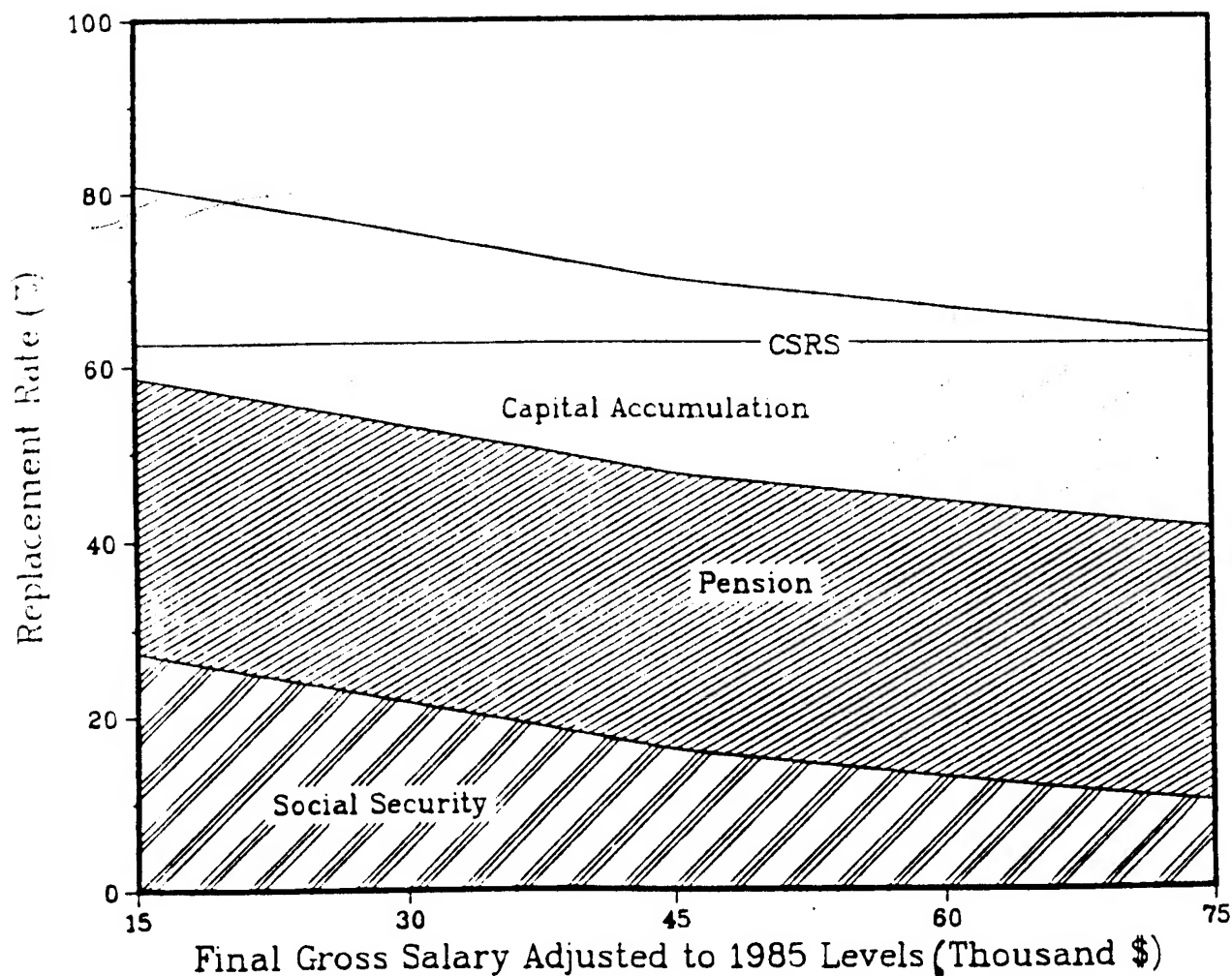
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STEVENS-ROTH PLAN

FIGURE 9. Benefit Value at Retirement for  
Workers with Different Salaries

Gross Replacement Rates  
Worker Retiring in the Year 2030

Age: 62  
Service: 35 years  
Salary: Varies



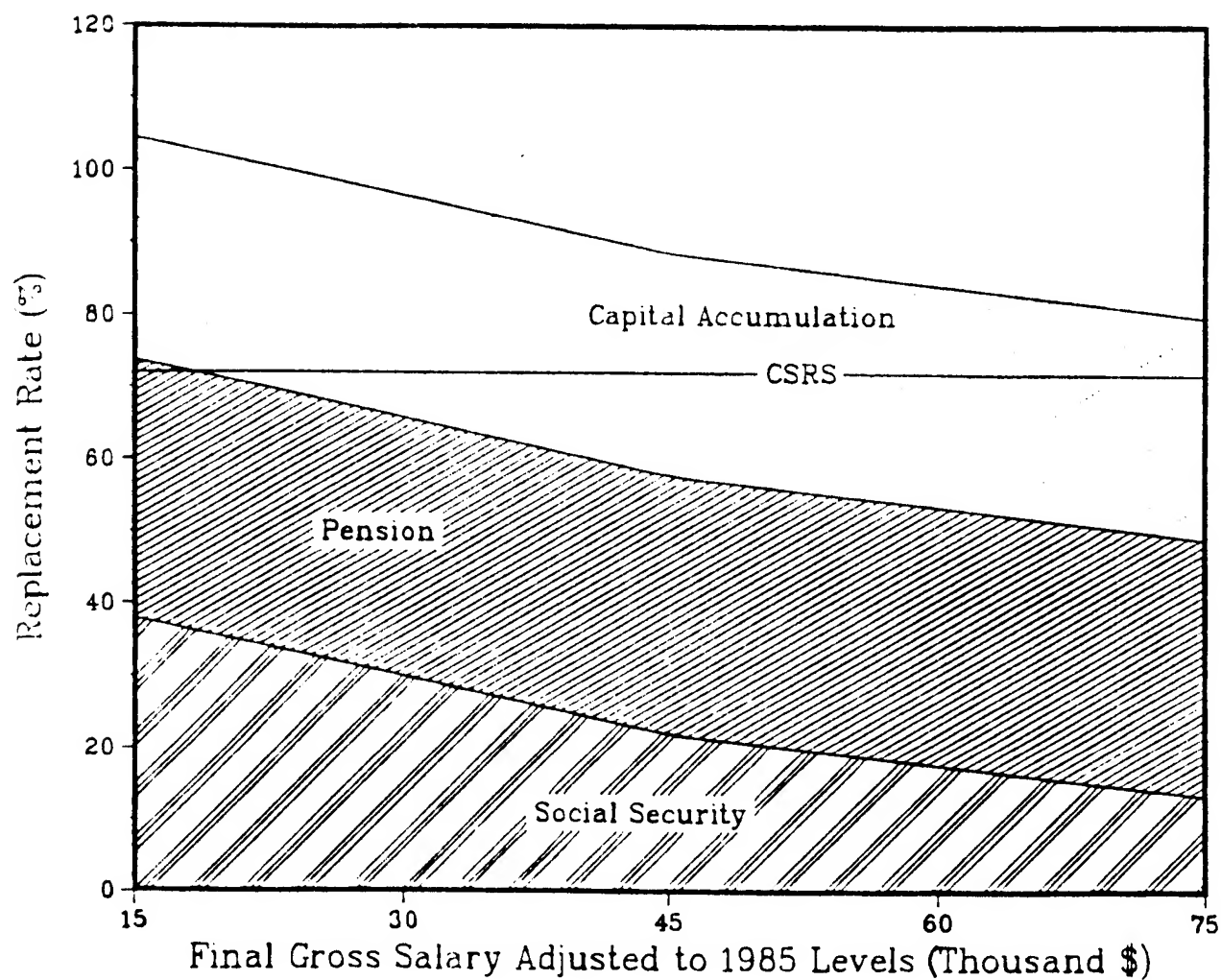
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STEVENS-ROTH PLAN

FIGURE 10. Benefit Value at Retirement for  
Workers with Different Salaries

Gross Replacement Rates  
Worker Retiring in the Year 2030

Age: 67  
Service: 40 years  
Salary: Varies



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## V. METHODOLOGICAL SUPPORT

### A. Cost and Replacement Rate Models

The estimates of retirement costs and benefits presented in this analysis were generated using the Congressional Research Service's cost and replacement rate models. These computer-based actuarial models were developed by CRS with actuarial support and a Pension Valuation Language (PVL) provided under contract by Hay-Huggins, Inc., an actuarial consulting firm. It should be noted that these models project future outcomes from assumptions. While such projections are valuable tools for making relative cost and benefit comparisons, it is inappropriate to imply or to seek a degree of accuracy for them that is in principle unattainable.

#### 1. Cost Model

The cost model projects long-term costs of pension designs. The approach used is known as "entry age normal cost," and can be generally understood as the percentage of every paycheck that should be invested, over the total career of each employee in a group of new entrants, to pay fully for all benefits received by that group, including all eligible survivors. Normal cost is formally defined as the present value of future benefits divided by the present value of future compensation. These values are expressed as a percentage of payroll, and provide a consistent measure of relative pension costs over time.

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## 2. Replacement Rate Model

The replacement rate model projects the percentage of gross preretirement wages replaced by gross postretirement benefits. This percentage can be shown at retirement and at various ages after retirement, with the latter expressed in values relative to purchasing power at retirement. Capital accumulation replacement rates assume the purchase of an annuity indexed to the assumed rate of inflation.

### B. Data and Assumptions

The cost and replacement rate models required the use of certain data and assumptions, in order to project cost and benefit outcomes for employees entering work in 1985 and retiring in the year 2030. A profile of the Federal workforce into the future was drawn from data of the current system, and other factors pertaining to costs and benefits were identified and assumptions about the relative weight of those factors were made. Complete documentation of the methodology, data and basis for all assumptions is available from CRS.

#### 1. Demographic Assumptions

Given the order of magnitude of Federal employment, fairly reliable data on the Federal workforce could be obtained, and was used whenever appropriate. The vast majority of the data used to construct a demographic profile of the Federal workforce was provided by the Office of Personnel Management (OPM). These data included career patterns, mortality and disability rates, probability of leaving a surviving dependent, etc. Certain modifications were made to the OPM data that lessen the growth over time in the patterns of career

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improvement, and social security estimations of future improvements in mortality were also incorporated.

## 2. Economic Assumptions

All economic assumptions were taken from the 1985 Social Security Trustees' Report under the designation, "Intermediate II-B." The II-B assumptions are most commonly accepted as being neither optimistic nor pessimistic. When the 1986 Trustees' report is issued, CRS will incorporate any changes to II-B into the cost and replacement rate models. For 1985, the assumptions were annual average increases of: Interest, 6.1 percent; wages, 5.5 percent; and prices, 4.0 percent.

## 3. Behavioral Assumptions

Changes in plan designs relative to one another will cause changes in behavior which in turn affect plan costs. The changes in assumed rates of retirement, separation, etc., were made by the actuarial consultant, after research and discussions with CRS staff.

## 4. The Cost of Social Security

Generally, the cost of social security to its participants is the same as the tax that must be paid to the program. For these estimates, the cost of social security is the ratio of social security (OASDI) taxes to total Federal payroll over the 75-year period of the projection, evenly divided between employees and the Federal Government as employer. Under social security II-B assumptions, the benefits and taxes of the program are roughly in balance over

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that period, if the tax on social security benefits is treated as a revenue to the program. It should be noted, however, that some of the social security taxes on Federal payroll are not received back by Federal workers in the form of benefits because the average of Federal wages covered by social security exceeds the average covered wage in employment outside the Federal Government. Because the social security formula enhances the benefits of lower-paid workers, approximately 0.4 percent of payroll of the tax credited to social security from Federal wages is redistributed to workers outside the Federal Government. If the Federal Government is viewed, not as an employer, but in its other role as participant in the national economy, this redistributed amount could be construed as a savings.

Other differences in the pattern of payments between the present CSRS and social security are also taken into consideration when costs or replacement rates for a new plan incorporating social security are compared to the current system. The value of this difference is approximately two percent of payroll. About two-thirds of the difference is attributable to the portable rights to social security earnings credits retained by employees who leave employment with less than a full career. The remainder of the difference, after certain offsets and overlaps are netted, is attributable to dependents' benefits payable under social security but not payable from the current CSRS. The sum of these differences in the pattern of payments has been distributed across the various benefit components of the proposal and is thus reflected in lower replacement rates at retirement (excluding benefits from capital accumulation) of about five percent of total benefits attributable to the employer share of total plan costs.



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## 5. Estimated Capital Accumulation Costs

Cost of the capital accumulation plans analyzed by CRS depend on the participation rate of individuals. Such rates, expressed as "percent of full participation," are influenced by two features of the plan: The rate at which employee payments to the capital accumulation plan are matched by employer payments, and the ceiling on employee contributions eligible for such matching dollars. Some employees will contribute the full amounts permitted by the plan specifications, others only some, still others not at all. The percent of full participation is the net average of full participation after all full, partial, and zero contributions have been combined.

The cost to the Federal Government of the capital accumulation plans is established by multiplying the matching rate specified for the plan by the estimated percent of full participation. For example, Hay-Huggins, Inc., estimated that a plan with a 50 percent employer match of employee contributions to 6 percent of pay would acquire a 55 percent average full participation. Multiplying that rate times the maximum government match (three percent) yields a Federal Government cost for the plan of 1.65 percent of pay.

This proposal includes a capital accumulation plan that permits the employees to contribute as much as 10 percent of their salaries, with the first 5 percent matched on a one for one basis. Hay-Huggins estimates that the phased vesting of 25 percent of the matching amount for years two through five would reduce the cost to the government approximately 0.03 percent, as employees who separated with less than five years of service lose portions of the matching amount. Thus, at a 60 percent rate of full participation, employees would contribute an average of approximately 3.0 percent of salary, and the Federal

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Government's matching cost would be approximately 3.0 percent of pay. Documentation of the method for arriving at the variable used for the capital accumulation cost assumptions is available from CRS.